

**CLAIMS****What is claimed is:**

1. An apparatus for cleaving an optical fiber waveguide, comprising:
  - 5       a) a support base;
  - b) a fixed fiber support comprising a fixed fiber base including a guide track having an upper track and a lower track attached to said support base and a self aligning fiber holder adapted to hold said fiber at a supply end thereof, said holder being removably attached to said fixed  
10       fiber base;
  - c) a fiber pull tension assembly having a tension assembly base attached to said support base and a pull clamp rotatably attached to said tension assembly base, said pull clamp having a roller and being openable to receive said fiber and hold it at a free end thereof,
  - 15       d) a tension spring adjustably attached to said pull clamp and said fixed fiber base, said spring rotationally biasing said pull clamp to place said fiber in tension between said pull clamp and said self aligning fiber holder; and
  - e) a scribing knife assembly comprising:
    - 20       (i) a motor drive assembly including a rotating crank;
    - (ii) a linear slide and a blade carriage slidably mounted thereon for reciprocal motion traversing a forward direction and a rearward direction of travel, said blade carriage being driven by an actuator pivotally attached to said carriage and said crank, and said blade

carriage comprising a fiber tension profile bar in engagement with said roller to control said tension;

(iii) an upwardly biased blade arm attached to said carriage and having a scribing blade thereon; and

5 (iv) a guide pin adapted to engage said guide track, said guide pin following said upper track during said rearward travel and said lower track during said forward travel, whereby said blade arm is biased to engage said fiber with said scribing blade with a scribing force and scribe said fiber during said rearward travel, and said  
10 blade arm is depressed to withdraw said scribing blade from engagement with said fiber during said forward travel;

2. An apparatus as recited by claim 1, further comprising a servo motor adapted to open and close said pull clamp to receive and secure said free end of said fiber.

3. An apparatus as recited by claim 1, wherein said scribing force of said blade is  
15 adjustable.

4. An apparatus as recited by claim 1, wherein said scribing force ranges from about 1 to 5 grams.

5. An apparatus as recited by claim 1, wherein said fiber tension profile bar comprises a plurality of profile steps, whereby said tension is applied at a  
20 plurality of levels during said rearward direction of travel of said blade carriage.

6. An apparatus as recited by claim 5, wherein said levels comprise a scribing level applied during said scribing and a fracture level applied subsequently, said scribing level being sufficient to hold said fiber taut during said scribing

without substantially curling or rotating and said fracture level being sufficiently higher than said scribing level to cause fracture of said fiber after said scribing.

7. An apparatus as recited by claim 1, further comprising a limit sensor adapted to determine the position of said blade carriage, said sensor being adapted to stop said motor drive assembly after completion of a reciprocating cycle of said blade carriage.

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